

CLAIMS

1. Phosphopeptide comprising an amino acid sequence having the following characteristics:

5 -2: E or L or V

-1: a hydrophobic amino acid, in particular I or L

0: Y

+1: G

+2: A or T or S

10 +3: a hydrophobic amino acid or a phenolic amino acid, in particular F or Y

+4: A or G

wherein the numbers represent the amino acid positions in the peptide and the Y in position 0 is a phosphorylated Tyrosine residue.

15 2. Phosphopeptide according to claim 1 comprising an amino acid sequence selected from the group consisting of

ELYGSYYA (SEQ ID NO: 1)

EFYGAFA (SEQ ID NO: 2)

EFYGAFG (SEQ ID NO: 3)

20 AEGELYGSLYA (SEQ ID NO: 4).

3. Phosphopeptide comprising an amino acid sequence having the following characteristics:

-2: E or P

25 -1: a hydrophobic amino acid, in particular F

0: Y

+1: G or A

+2: T

+3: a hydrophobic amino acid, in particular Y or F or I or L

30 +4: G or A

wherein the numbers represent the amino acid positions in the peptide and the Y in position 0 is a phosphorylated Tyrosine residue.

4. Phosphopeptide according to claim 3 comprising an amino acid sequence selected from the group consisting of

EFYATYG (SEQ ID NO: 5)

EFYGTYG (SEQ ID NO: 6)

5 EFYATYA (SEQ ID NO: 7)

EFYGTYA (SEQ ID NO: 8).

5. Phosphopeptide comprising an amino acid sequence having the following characteristics:

10 -3: an acidic amino acid, in particular E or D

-2: L or E

-1: a hydrophobic amino acid, in particular L

0: Y

+1: A or G

15 +2: S

+3: Y or L or an acidic amino acid

+4: a phenolic amino acid, in particular Y or F.

wherein the numbers represent the amino acid positions in the peptide and the Y in position 0 is a phosphorylated Tyrosine residue.

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6. Phosphopeptide according to claim 5 comprising the amino acid sequence ELLYGSYY (SEQ ID NO: 9).

25 7. Phosphopeptide comprising an amino acid sequence having the following characteristics:

-2: E or P

-1: a hydrophobic amino acid, in particular F or Y or L

0: Y

+1: A

30 +2: E or Q or H

+3: a hydrophobic amino acid, in particular V or I

+4: G

wherein the numbers represent the amino acid positions in the peptide and the Y in position 0 is a phosphorylated Tyrosine residue.

8. Phosphopeptide according to claim 7 comprising the amino acid sequence EFYAEVG (SEQ ID NO: 10).

5 9. Phosphopeptide comprising an amino acid sequence having the following characteristics:

-2: E and F

-1: a hydrophobic, in particular a phenolic amino acid,

0: Y

10 +1: A

+2: E

+3: V or I

+4: G

+5: R

15 wherein the numbers represent the amino acid positions in the peptide and the Y in position 0 is a phosphorylated Tyrosine residue.

10. Phosphopeptide according to claim 9, wherein the amino acid in position -1 is F.

20 11. Phosphopeptide according to claim 9 or 10, comprising the amino acid sequence EFYAEVGR (SEQ ID NO: 11).

25 12. Phosphopeptide according to any of the preceding claims, comprising less than at or about 50 amino acids or less than at or about 30 amino acids or less than at or about 20 amino acids or less than at or about 15 amino acids or about 10 amino acids or about 9 amino acids or about 8 amino acids or about 7 amino acids.

30 13. Peptidomimetic or non-peptide mimetic designed on the basis of the sequence and/or the structure of a phosphopeptide according to any of the preceding claims, wherein the peptidomimetic is not the peptide RNNEFYA-NH₂, Y being a phosphorylated Tyrosine residue.

14. Functional derivative of a phosphopeptide according to any of the preceding claims, comprising at least one moiety attached to one or more functional groups, which

occur as one or more side chains on the amino acid residues, wherein the functional derivative is not the peptide RNNEFYA-NH₂, Y being a phosphorylated Tyrosine residue.

- 5 15. Functional derivative according to claim 14, wherein the moiety is a polyethylene glycol (PEG) moiety.
16. Phosphopeptide according to any of the preceding claims, wherein the peptide is linked to a cell-penetrating moiety.
- 10 17. Use of a phosphopeptide, peptidomimetic, non-peptide mimetic, or functional derivative according to one of the preceding claims as medicament.
- 15 18. Use of a phosphopeptide according to claim 1 or 2, or a peptidomimetic, a non-peptide mimetic, or functional derivative thereof, for the manufacture of a medicament for treatent and/or prevention of cancer, in particular cancer of the stomach or of the intestine.
- 20 19. Use of a phosphopeptide according to claim 3 or 4, or a peptidomimetic, a non-peptide mimetic, or functional derivative thereof, for the manufacture of a medicament for treatment and/or prevention of diabetes and/or obesity.
- 25 20. Use of a phosphopeptide according to claim 3 or 4, or a peptidomimetic, a non-peptide mimetic, or functional derivative thereof, as suppressor of appetite.
21. Use of a phosphopeptide according to claim 5 or 6, or a peptidomimetic, a non-peptide mimetic, or functional derivative thereof, for the manufacture of a medicament for treatment and/or prevention of inflammation.
- 30 22. Use of a phosphopeptide according to claim 5 or 6, or a peptidomimetic, a non-peptide mimetic, or functional derivative thereof, for the manufacture of a medicament for treatment and/or prevention of multiple sclerosis.

23. Use of a phosphopeptide according to claim 5 or 6, or a peptidomimetic, a non-peptide mimetic, or functional derivative thereof, for the manufacture of a medicament for treatment and/or prevention of an angiogenesis-dependent disease, such as a solid cancer or metastatic cancer.

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24. Use of a phosphopeptide according to any of claims 7 to 9, or a peptidomimetic, a non-peptide mimetic, or functional derivative thereof, for the manufacture of a medicament for treatment and/or prevention of an infectious disease, in particular of leishmaniasis.

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25. Pharmaceutical composition comprising one or more of the phosphopeptides, mimetics, or functional derivative as claimed in any of claims 1 to 16, optionally further comprising a pharmaceutically acceptable carrier, excipient, stabilizer, or diluent.

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